Appendix M

Long-Term Impacts Associated with No Further Disposal of HSW at the Hanford Site

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M.1 Introduction

Consideration was given to an alternative of No Further Disposal of Hanford solid waste (HSW) at Hanford. This alternative would differ from the No Action Alternative evaluated in this HSW EIS in that future wastes from neither Hanford nor offsite generators would be accepted for disposal under the HSW program. The following waste types underwent an analysis of long-term environmental impacts:

- Pre-1970 through 1995 low-level waste (LLW)
- Category (Cat) 1 and Cat 3 LLW disposed of in the period 1996-2007
- Mixed LLW (MLLW) for the period 1996-2007 that could be disposed of in Trenches 31 and 34 in the 200 West Area with any remaining MLLW stored in the Central Waste Complex (CWC).

M.2 Impacts on Groundwater

Impacts on groundwater are presented in terms of annual dose to an individual drinking 2 liters of water per day from wells located down-gradient from the existing waste disposal facilities. The doses, as a function of time for 10,000 years after site closure, are presented in Figures M.1 – M.3 for the well 1 km down-gradient from the 200 West Area low-level burial grounds (LLBGs), the northwest well 1 km from the 200 East Area LLBGs, and the near-river well. Dose plots are presented for both capped and uncapped LLBGs (MLLW trenches 31 and 34 are capped in both cases). The plot for the No Action Alternative as provided in Section 3.4 is also shown.

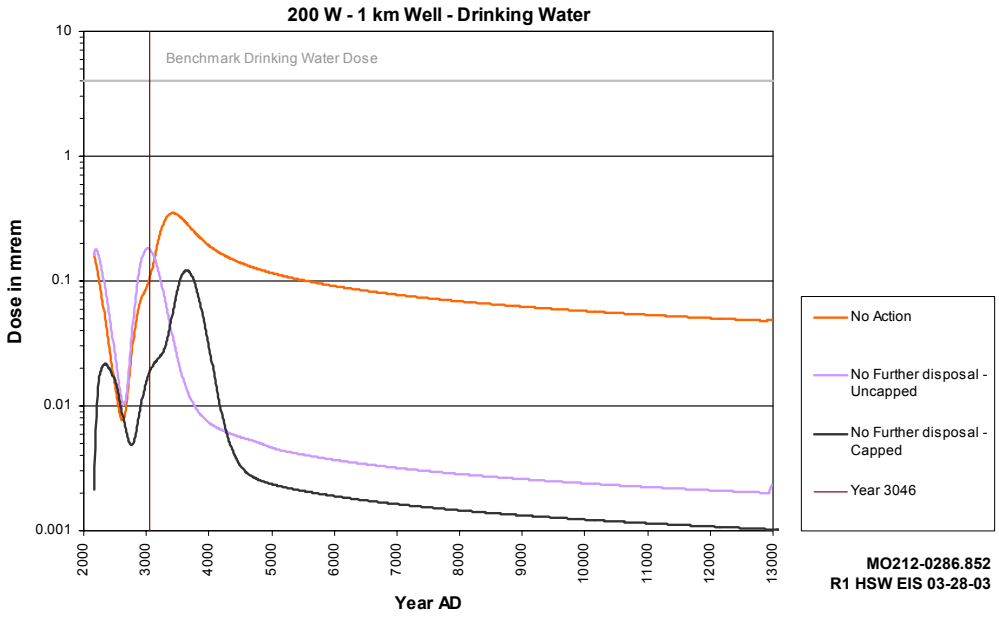

Figure M.1. Annual Dose from Drinking Water Containing Maximum Combined Concentrations of Radionuclides in Groundwater at 1 km Down-Gradient from the 200 West Area as a Function of Calendar Year

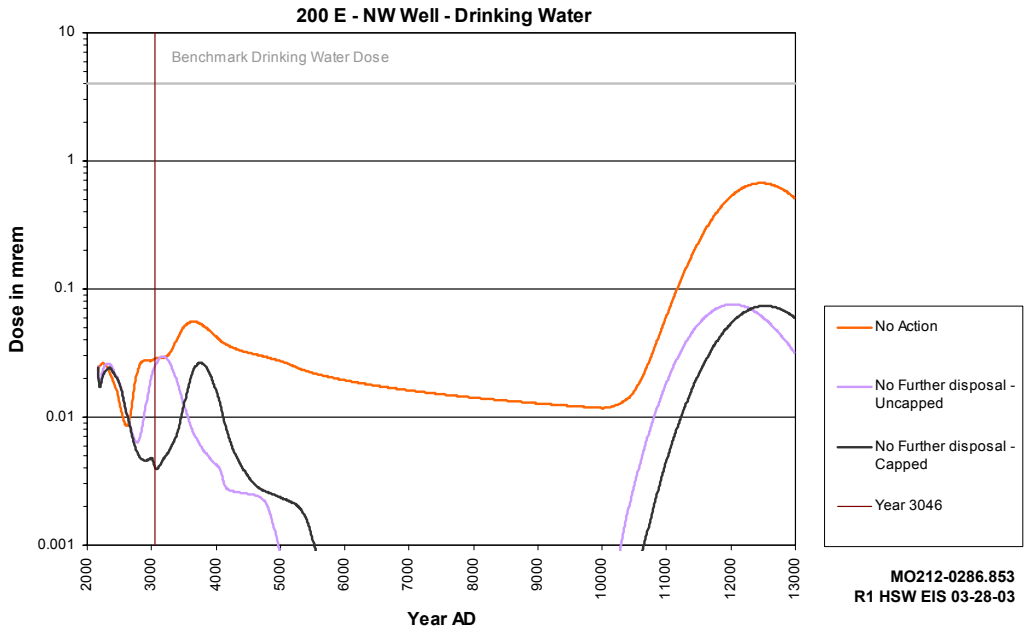

Figure M.2. Annual Dose from Drinking Water Containing Maximum Combined Concentrations of Radionuclides in Groundwater 1 km Down-Gradient Northwest from the 200 East Area as a Function of Calendar Year

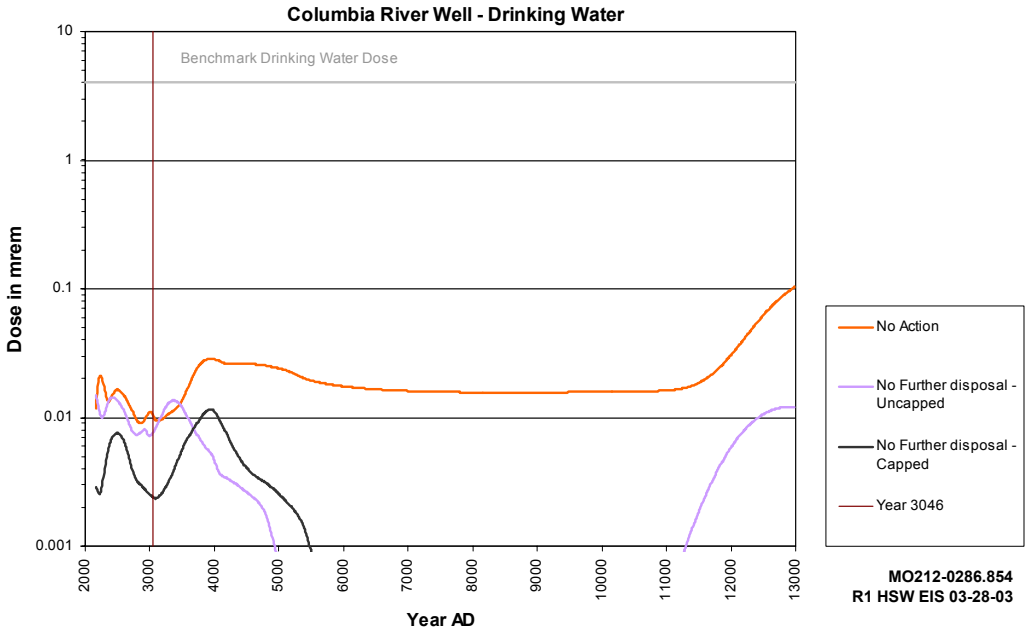

Figure M.3. Annual Dose from Drinking Water Containing Maximum Combined Concentrations of Radionuclides in Groundwater Near the Columbia River as a Function of Calendar Year

As would be expected, the plots for No Further Disposal show lower doses over most of the period of analysis than do the plots for the No Action Alternative. However, the doses are essentially the same in the earlier part of the period of analysis, as the additional inventories of HSW do not contribute. It may also be noted that capping the wastes provides for only a minimal reduction in doses; however, the presence of caps shifts the arrival of contaminants and, consequently, the doses by roughly 600 years.

Impacts on groundwater are also presented in terms of annual dose to the hypothetical resident gardener as a function of time in Figures M.4 – M.6, and to the hypothetical resident gardener with a sauna or sweat lodge scenario in Figures M.7 – M.9.

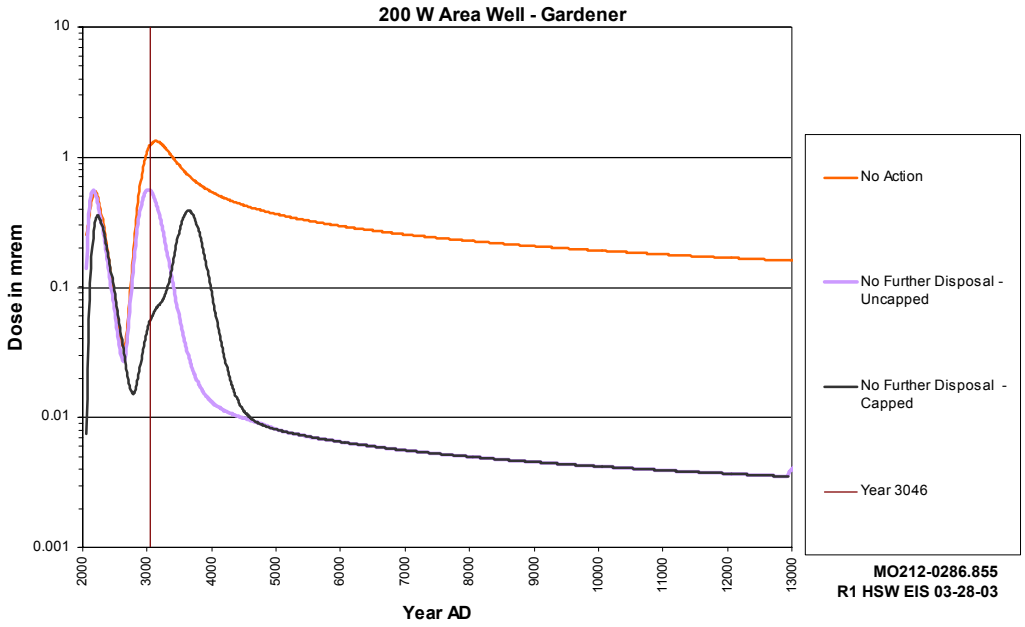

Figure M.4. Annual Dose to a Hypothetical Resident Gardener at Various Times over 10,000 Years Using Water from a Well 1 km Down-Gradient from 200 West Area

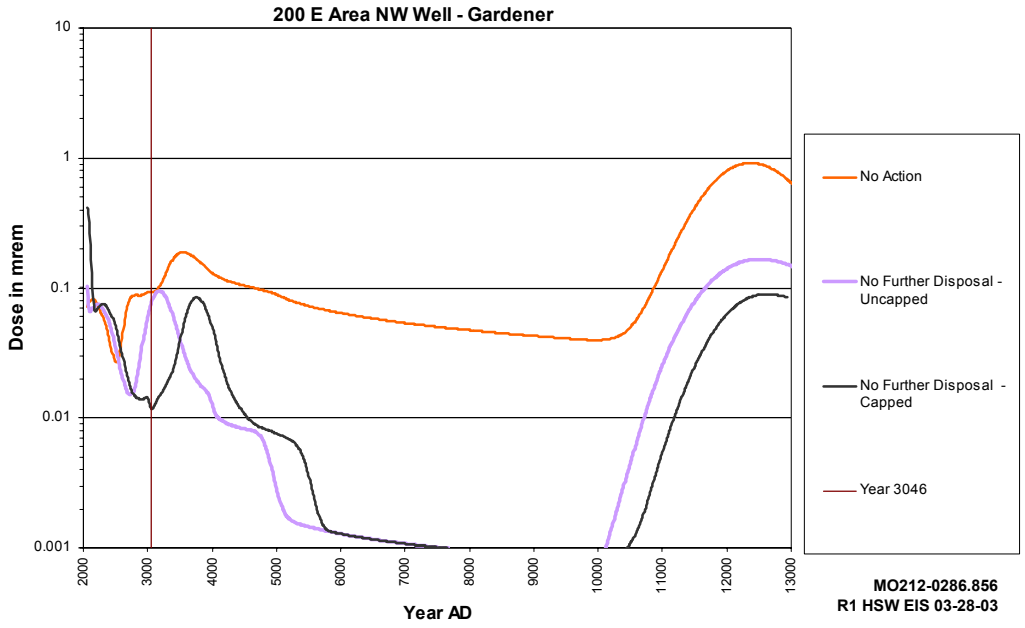

Figure M.5. Annual Dose to a Hypothetical Resident Gardener at Various Times over 10,000 Years Using Water from a Well 1 km Down-Gradient Northwest from the 200 East Area

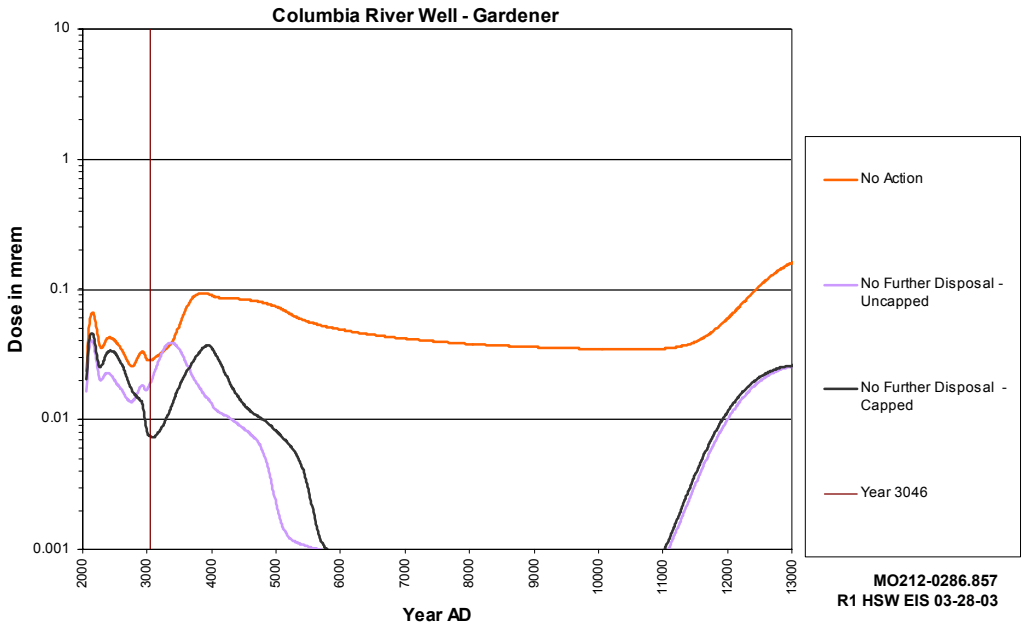

Figure M.6. Annual Dose to a Hypothetical Resident Gardener at Various Times over 10,000 Years Using Water from a Well Adjacent to the Columbia River

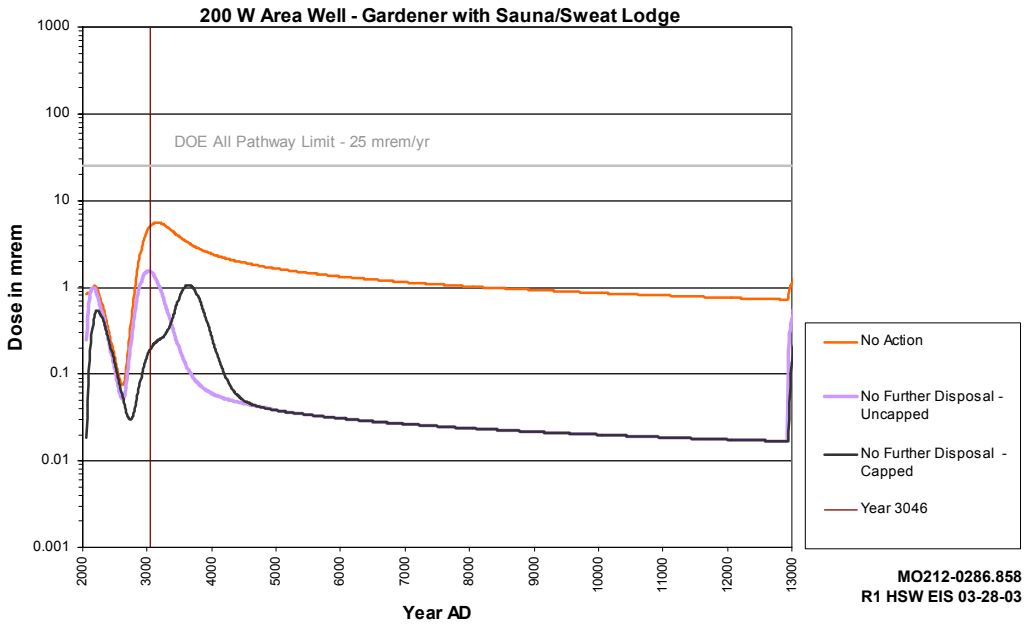

Figure M.7. Annual Dose to a Hypothetical Resident Gardener with a Sauna/Sweat Lodge Scenario at Various Times over 10,000 Years Using Water from a Well Down-Gradient from the 200 West Area

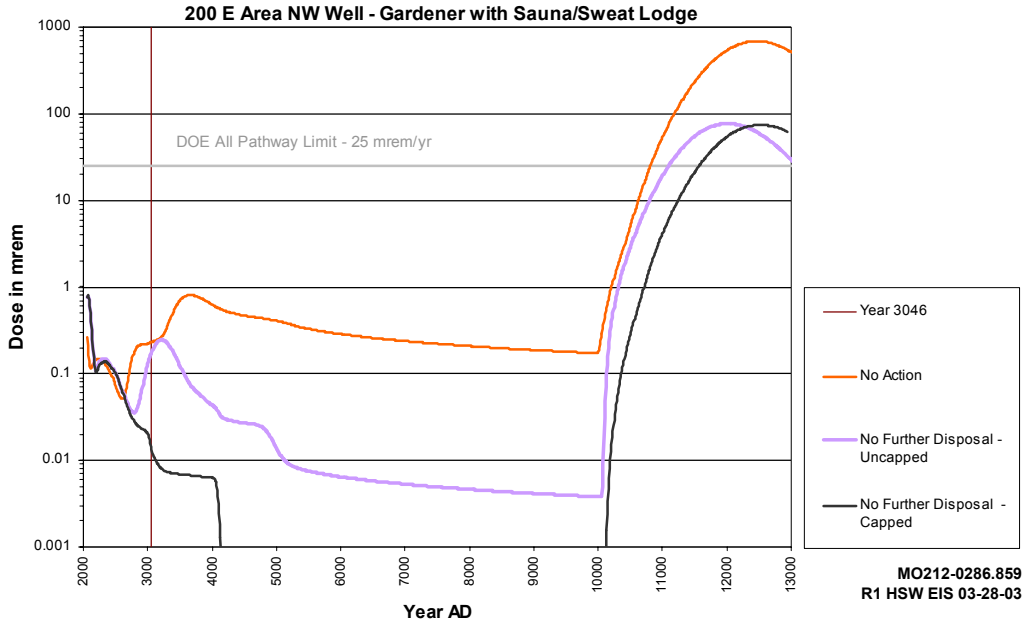

Figure M.8 Annual Dose to a Hypothetical Resident Gardener with a Sauna/Sweat Lodge Scenario at Various Times over 10,000 Years Using Water from a Well Down-Gradient Northwest from the 200 East Area

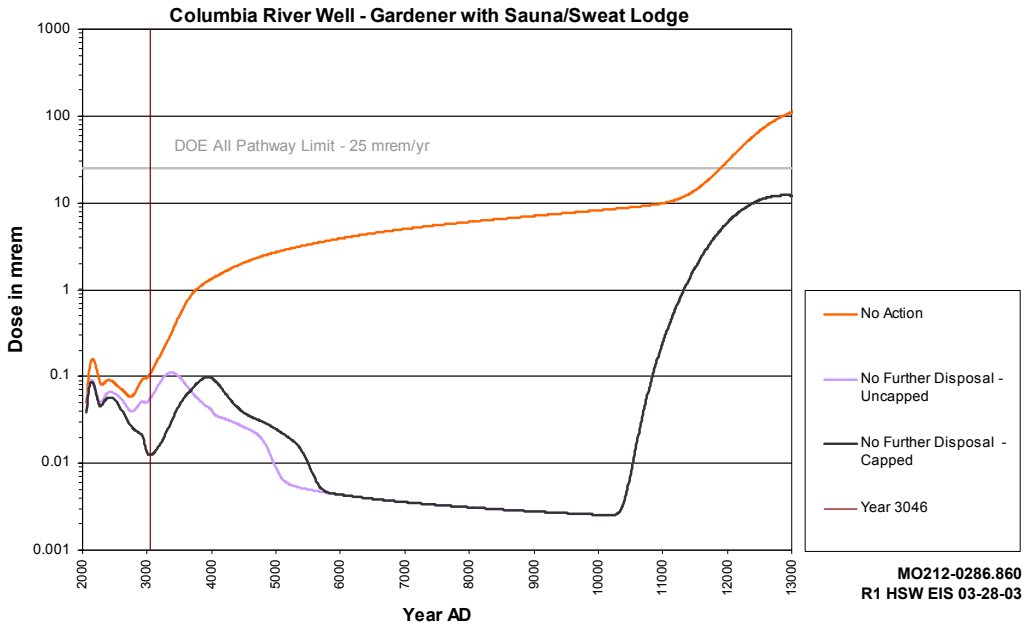

Figure M.9. Annual Dose to a Hypothetical Resident Gardener with a Sauna/Sweat Lodge Scenario at Various Times over 10,000 Years Using Water from a Well Adjacent to the Columbia River

Impacts on groundwater in terms of annual dose to the hypothetical resident gardener are higher than those in terms of drinking water dose, but, in general, follow the same pattern. Again, the pattern is similar in terms of the hypothetical resident gardener with sauna or sweat lodge, but the doses are larger due to the inhalation pathway.